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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,910	09/20/2005	Takeshi Nakajima	278091US0PCT	4692
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
SZEWCZYK, CYNTHIA				
ART UNIT		PAPER NUMBER		
1791				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/549,910

Applicant(s)

NAKAJIMA ET AL.

Examiner

CYNTHIA SZEWCZYK

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 42-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/US)
Paper No(s)/Mail Date 5/27/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The amendment filed May 27, 2008 has been entered and fully considered.
2. Claims 42-59 remain pending.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 42-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 42 cites "the surface of the glass substrate having a surface compressive stress of at most 10 MPa at a temperature of 150 °C or lower". It is unclear whether the applicant intends that the glass substrate has the property of having a surface compressive stress of at most 10 MPa at a temperature less than 150 °C or that the glass has a temperature of less than 150 °C during application.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 42-44, 48-51, and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over HISHINUMA et al (JP 2001-080939 A) in view of ALUMAXBATH (Tempered Glass).

HISHINUMA et al. discloses an apparatus for the production of a glass sheet with photocatalytic titanium oxide film (JPO abstract). HISHINUMA et al. discloses that the glass is cooled gradually after exiting the float bath (trans. para. 0014). It is known in the art that non-tempered glass has no surface compression, therefore, it would have been obvious that the surface compression of the glass substrate would be under 10 MPa. HISHINUMA discloses that the glass is intended for use as windows for buildings and automobiles (para. 0001). It is well known in the art that glass must be tempered in order to be suitable for use as windows for buildings and automobiles.

The Alumax Bath company website discloses that fully tempered glass is used in for glass products in the building industry and motor vehicle industry (p. 2). Alumax Bath discloses that tempering is achieved by quickly air quenching hot glass (p. 1). Alumax Bath discloses that in a typical manufacturing process, glass is raised to a temperature of approximately 1200 °F (p. 1), or approximately 648 °C, which would fall

into the range of instant claim 42. Alumax Bath discloses that the glass is then air quenched with blast nozzles and notes that it is important to cool the glass on both sides to avoid uneven heat extraction (p. 1). Alumax Bath discloses that a quenched condition becomes stable when the temperature is reduced to approximately 400 °F (p. 1), or approximately 200 °C, which would fall into the range of instant claim 42. Alumax Bath discloses that a fully tempered glass must have a surface compression of 10,000 psi or higher (p. 1), or 68 MPa or higher, which would fall into the range of instant claim 42. It would have been obvious that the glass of HISHINUMA would follow the guidelines of Alumax Bath, because Alumax Bath discloses guidelines for attaining glass sheets that follows the Federal Specification DD-G-1403B. Alumax Bath discloses that in order to use glass in building applications, it must meet federal, state, and local building codes. Therefore, the claimed invention would have been obvious.

It would have been obvious that through optimization testing a person having skill in the art could have arrived at the cooling formula of instant claim 42 or heating time of instant claims 43 and 44. Alumax Bath discloses that the air quenching must occur quickly (p. 1), therefore it would have been obvious that the quenching could have occurred within 0.2-5 seconds as in the formula of instant claim 42.

HISHINUMA et al. discloses that the titanium concentration is 1-20% by weight and preferably 2-10% by weight (trans. para. 20), which would incorporate the range of instant claim 48.

HISHINUMA et al. notes that a sol is used to make the titanium dioxide (trans. para. 3) as in instant claim 49.

HISHINUMA et al. discloses that the thickness of the film can be 0.1-1.0 μm (trans. para. 21) which would overlap with the range in instant claim 50. HISHINUMA et al. warns against using thickness less than 0.1 μm since it would be unable to demonstrate sufficient photocatalyst activity (trans. para. 21).

HISHINUMA et al. discloses that an anatase titanium oxide can be used in the film (JPO abstract) just as in instant claim 51. Therefore, the claimed invention would have been obvious.

Alumax Bath discloses that in a typical manufacturing process, glass is raised to a temperature of approximately 1200 °F (p. 1), or approximately 648 °C, which would fall into the range of instant claim 57.

Alumax Bath discloses that a quenched condition becomes stable when the temperature is reduced to approximately 400 °F (p. 1), or approximately 200 °C, which would fall into the range of instant claim 58.

Alumax Bath discloses that a fully tempered glass must have a surface compression of 10,000 psi or higher (p. 1), or 68 MPa or higher, which would fall into the range of instant claim 59.

9. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over HISHINUMA et al (JP 2001-080939 A) in view of ALUMAXBATH (Tempered Glass) as applied to claims 42-44 and 48-51 above, and further in view of LEWIS (glass).

HISHINUMA et al. as modified by Alumax Bath discloses an apparatus for the production of a tempered glass sheet with photocatalytic titanium oxide film (DERWENT

abstract). Modified HISHINUMA et al. is silent as to the composition of the glass. The most common type of glass is soda lime glass, which contains about 20% sodium carbonate according to LEWIS, which would contain a percentage of sodium within the range in instant claim 45. It would be obvious to use conventional soda lime glass in the process of modified HISHINUMA et al. Therefore, the claimed invention would have been obvious.

10. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over HISHINUMA et al (JP 2001-080939 A) in view of ALUMAXBATH (Tempered Glass) as applied to claims 42-44 and 48-51 above, and further in view of GREENSBURG et al. (US 2002/0114945 A1).

HISHINUMA et al. as modified by Alumax Bath discloses an apparatus for the production of a tempered glass sheet with photocatalytic titanium oxide film (DERWENT abstract). Modified HISHINUMA et al. fails to disclose the area treated. GREENSBURG et al. discloses a method for the production of a photocatalytic on a glass substrate (abstract) using spray pyrolysis (para. 20, line 3). GREENBERG et al. discloses that the coating can be titanium oxide (para. 20, line 6). GREENBERG et al. discloses an example in which titanium dioxide is sprayed on a glass substrate using spray pyrolysis (example 4) wherein the sample glass has dimensions of 10.16 cm x 10.16 cm, which would have an area of 0.01 m². Since the glass used in GREENBERG et al. can be at least 0.01 m² it would be obvious that the range would cover areas of 0.5 m² and above. It would have been obvious to use the same sized glass in the process of modified

HISHINUMA et al. because they both produce a glass substrate with a titanium oxide film by the use of pyrolysis spray. Therefore, the claimed invention would have been obvious.

11. Claims 47 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over HISHINUMA et al (JP 2001-080939 A) in view of ALUMAXBATH (Tempered Glass) as applied to claims 42-44 and 48-51 above, and further in view of DOUSHITA et al. (US 6,156,409).

HISHINUMA et al. as modified by Alumax Bath discloses an apparatus for the production of a tempered glass sheet with photocatalytic titanium oxide film (JPO abstract). Modified HISHINUMA et al. fails to disclose the surfactant. DOUSHITA et al. discloses a process for producing glass articles with a non-fogging film using metal oxides (abstract). DOUSHITA et al. discloses the use of a surfactant in the film (claim 1). It would be obvious to use a surfactant in the film of modified HISHINUMA et al. because the surfactant improves the anti-fogging property (col. 8, lines 4-6) and would cover stain constituents (col. 8, lines 16-18) which is a desirable trait in glass sheets. DOUSHITA et al. also discloses that the film has an arithmetic mean roughness of 1.5 to 80 nm (abstract), which would overlap with the range in instant claim 52. It is obvious that the film on the glass of modified HISHINUMA et al would have the same properties because they both teach a glass substrate with a titanium oxide film. Therefore, the claimed invention would have been obvious.

12. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over HISHINUMA et al (JP 2001-080939 A) in view of ALUMAXBATH (Tempered Glass) as applied to claims 42-44 and 48-51 above, and further in view of NIWA et al. (US 6,408,743 B2).

HISHINUMA et al. as modified by Alumax Bath discloses an apparatus for the production of a tempered glass sheet with photocatalytic titanium oxide film (DERWENT abstract). Modified HISHINUMA et al. discloses that if the thickness of the film exceeds 1.0 μm , then the luster and haze may become high and may not be suitable for practical use (trans. para. 21). Modified HISHINUMA et al. is silent as to what values are considered high. NIWA et al. discloses that a glass haze of 5% or less is considered to be desirable, which incorporates the range of instant claim 41. It is obvious that the glass of modified HISHINUMA et al. would preferably contain a haze of less than 5% because that is considered suitable for practical use. Therefore, the claimed invention would have been obvious.

13. Claims 54-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over HISHINUMA et al (JP 2001-080939 A) in view of ALUMAXBATH (Tempered Glass) as applied to claims 42-44 and 48-51 above, and further in view of CHAO (US 4,596,745).

HISHINUMA et al. as modified by Alumax Bath discloses an apparatus for the production of a tempered glass sheet with photocatalytic titanium oxide film (DERWENT abstract). Modified HISHINUMA et al. discloses that the glass is cooled gradually after

exiting the float bath (trans. para. 0014) and discloses that the temperature of the ribbon is 600 °C or less (para. 0012).

CHAO teaches a method for applying a non-glare coating on optical glass screens. CHAO discloses that the glass is preheated to a temperature of approximately 20 C to 75 C (col. 3, lines 51-55), which overlaps with ranges of instant claims 54-56. CHAO discloses that higher temperatures produce a more defined surface topology and greater diffusion effect (col. 3, lines 51-55). It would have been obvious to try the preheating temperature of CHAO in modified HISHINUMA because modified HISHINUMA discloses that the process can be used to make optical lens (para. 0002) and the coating in CHAO is a titanium element containing liquid (abstract). Therefore, the claimed invention would have been obvious.

Response to Arguments

14. Applicant's arguments with respect to claims 42-53 have been considered but are moot in view of the new ground(s) of rejection.

15. Applicant's arguments filed May 27, 2008 have been fully considered but they are not persuasive. Applicant argues that the glass of HISHINUMA is gradually cooled after the titanium film is applied. Paragraph 14 of translated HISHINUMA discloses that it is the glass ribbon that is gradually cooled after exiting the float glass bath. Paragraph 15 of HISHINUMA discloses that the glass is cooled by titanium dioxide film spray. Additionally, the new rejection utilizing Alumax Bath teaches the temperatures and pressure ranges of instant claims 42 and 54-59.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CYNTHIA SZEWCZYK whose telephone number is (571)270-5130. The examiner can normally be reached on Monday through Thursday 7:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
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CS